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NEW AUSTRALIAN BEES OF THE GENUS *NOMIA*.

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TEN species of *Nomia* have been recorded from Australia, all described by F. Smith, and published in Trans. Ent. Soc. Lond., one in 1862, and nine in 1875. Smith remarked that *N. generosa* was probably the male of *N. macrens*, and I believe that *N. ruficornis* (*smithella*, Gribodo, 1894) is the male of *N. nana*; so the list probably includes only eight valid species. It is evident, however, that it does not do justice to the actual facts, for the British Museum collection contains quite a series of hitherto unreported forms, which I describe below. The Austro-Malay islands (including Celebes, the Moluccas, New Britain, the Aru islands, &c.) are rich in species of *Nomia* (twenty-one described), but, so far as I am able to ascertain, none of these are quite identical with those of Australia, nor is any species very widely spread among the islands.

The following table separates the species now described :—

	Hind margins of abdominal segments pearly green ; hind femora incrassate and humped above (♂)	
		<i>pulchribalteata</i> subsp. <i>austroragans</i> , Ckll.
	Hind margins of abdominal segments not so	1.
1.	Tegulæ very large, light fulvous ; sides of face covered with white tomentum (♀)	<i>lepidota</i> , Ckll.
	Tegulæ not especially remarkable	2.
2.	Tibiæ and tarsi red, the former with a suffused blackish mark in front ; face covered with fulvous tomentum ; abdomen with rufo-fulvous hair-bands ; hind legs hardly deformed (♂)	<i>rufocognita</i> , Ckll.
	Tibiæ and tarsi not red, or not distinctly so	3.
3.	Black species ; abdomen without well-developed hair-bands (♂)	<i>tenuihirta</i> , Ckll.
	Abdomen distinctly banded with hair, or the segments whitish margined	4.

4. Black 5.
 Wholly or in part green or blue 6.
5. Hind margins of second and following abdominal segments broadly yellowish white; second submarginal cell extremely small (♀) *semipallida*, Ckll.
 Hind margins of second and following abdominal segments not white; second submarginal cell larger (♂) *hypodonta*, Ckll.
6. Mesothorax black (♂ ♀) *australica*, Sm., var. *reginæ*, Ckll.
 Mesothorax green or blue 7.
7. Mesothorax yellowish green (♂) *flavoviridis*, Ckll.
 Mesothorax blue or greenish blue (♂ ♀) *flavoviridis* var. *doddi*, Ckll.

Nomia (*Hoplonomia*) *pulchribalteata*, var. *austrovagans*, n. subsp.

♂. Length about $8\frac{1}{2}$ mm. (the position of the specimen makes it difficult to measure); black, head and thorax with sordid yellowish-white pubescence, the scanty short hair on thorax above dark; tongue long and slender; eyes red; face very broad above, strongly narrowed below; clypeus with a keel; mandibles and antennæ black, the latter not especially long, not crenulate; vertex dullish, granulo-punctate; mesothorax dull, very densely punctured; scutellum with a pair of widely separated short (subpyramidal) spines; post-scutellum covered with white tomentum, and provided with two long black spines, much closer together than those of the scutellum; basal area of meta-thorax extremely short, with little transverse (antero-posterior) ridges; tegulæ fuscous in the middle, then fulvous, and the margin white-hyaline; wings rather yellowish, the apex a little darker; stigma and nervures piceous, second submarginal cell higher than broad, but not far from square; legs black, hind tarsi and outer and apical part of hind tibiæ ferruginous, the red brightest on the tibiæ; hind femora swollen, strongly humped above, but not toothed beneath; hind tibiæ gradually broadened to the apex, with a prominent convex keel on the outer side, but the inner apex is blunt, not toothed; abdomen black, strongly and coarsely punctured, the hind margins of the first five segments with smooth pearly light green bands, shining purple in some lights, and appearing white in others, the first band narrowest; sixth segment with a very broad and deep semicircular median emargination; apical part of venter ferruginous. The third and following abdominal segments have black hairs overlapping the bands.

Hab. Adelaide (F. Smith collection, 79. 22).

This is the first Australian *Hoplonomia*. It is very close to *N. westwoodii*, Gribodo, from Bengal, and *N. pulchribalteata*, Cameron, from New Britain; it is, in fact, so close to the latter that for the present I treat it as a subspecies. It will be known by the purple tints of the abdominal bands, resembling in this respect *N. formosa*, Sm., from Celebes.

Nomia lepidota, n. sp.

♀. Length, 7 mm. or rather more; black, the hind margins of the abdominal segments narrowly reddish; head broad, minutely

rugoso-punctate, eyes strongly converging below; sides of face, adjacent to the eyes, with very broad bands of white tomentum, but clypeus and middle of face without this tomentum; anterior margin of clypeus with some shining pale golden hairs; mandibles faintly reddish in the middle; flagellum obscure ferruginous beneath; tubercles covered with white tomentum; pleura with white hair, not entirely concealing the surface; mesothorax and scutellum bare, with very large punctures; post-scutellum entirely covered with white tomentum; metathorax with large punctures, its basal area reduced almost to nothing; tegulæ very large (about three-quarters the length of mesothorax), being broadly produced backwards, light fulvous, dark only about the base of attachment; wings slightly dusky, stigma rufous, nervures dark, second submarginal cell rather large; legs very dark reddish, with white hair, that on inner side of basal joint of hind tarsi very pale orange; abdomen with a thin white pubescence, but no distinct hair-bands, but on each side of the first segment is a very conspicuous patch of white tomentum.

Hab. Sydney; F. Smith collection, 79. 22. The numbers cited are the accession-numbers of the British Museum. Readily known by the large tegulæ and bandless abdomen.

Nomia rufocognita, n. sp. (or *generosa*, var. ?).

♂. Length about 9 mm.; black, the tibiæ and tarsi bright ferruginous, the tibiæ with a blackish spot in front; head broad; face covered with fulvous tomentum, occiput with fulvous hair; mandibles simple, curved and very sharp, ferruginous, blackened at the apex; labrum ferruginous; antennæ very long, wholly dark, flagellum crenulated, the apical part very strongly; hair of thorax fulvous, tubercles covered with tomentum, as also the post-scutellum, but on the latter it is white; mesothorax and scutellum with strong close punctures of moderate size; tegulæ ordinary, bright ferruginous, the margins subhyaline; wings rather yellowish, ample, stigma and nervures dark reddish brown, second submarginal cell much higher than broad; legs with thin fulvous hair; hind legs scarcely deformed, their femora rather stout, their tibiæ flattened, the posterior edge convex, the anterior concave; abdomen strongly and very densely punctured, with fulvous pubescence, the hind margins of the segments whitish hyaline (those of the second and third very broadly so), and having thin bands of fulvous hair; venter simple.

Hab. Queensland, 94. 61; also marked 312, and what looks like Hy. Closely allied to *N. generosa*, Sm., but distinguished by the fulvous pubescence; it may possibly be only a variety. The scutellum is bigibbose.

Nomia tenuihirta, n. sp.

♂. Length about 8 mm.; black, even to the tarsi, the flagellum obscure brownish beneath; front rugoso-punctate; face covered with white tomentum, except the anterior part of clypeus, and a median longitudinal band below the antennæ, in the middle of which is a raised shining line; mandibles black; last antennal joint with an

oblique shining truncation ; mesothorax and scutellum with extremely close minute punctures ; scutellum not at all bigibbose or depressed in the middle ; mesothorax with a good deal of appressed white hair, very conspicuous but not covering the surface ; tubercles and post-scutellum covered with coarse white hair ; basal area of metathorax reduced to a narrow band, with little transverse keels ; punctures on posterior face of metathorax large ; tegulæ reddish brown centrally, otherwise yellowish hyaline ; wings almost clear, a little dusky at apex ; stigma rufous, nervures dark rufous ; second submarginal cell much higher than broad, receiving the first recurrent nervure before its end ; legs with white hair ; spurs black ; hind legs scarcely modified, the tibiæ somewhat produced at apex beneath, the spurs arising from beneath the point ; abdomen shining but well punctured, the punctures large on the first segment, smaller on the second, and successively smaller and fainter on the following ones ; no distinct hair-bands, but a scattered white pubescence, especially on the apical half, and conspicuous erect white hair on the base and sides of the first segment ; apex broadly truncate, with rounded corners ; no ventral teeth, but first ventral segment raised in the middle.

Hab. Queensland, 94. 61 ; also labelled Ridg., and 638. Easily known from *N. argentifrons* by the normally formed hind legs and the absence of pale reddish colour on the clypeus, legs, &c.

Nomia semipallida, n. sp.

♀. Length about 8 mm. ; black, the tarsi dark reddish, the claws fulvous tipped with black ; head broad ; eyes yellowish brown ; face covered with white tomentum, which appears yellowish white and dull seen from in front, but shining snow-white seen obliquely from the side ; a longitudinal keel between antennæ ; cheeks with yellowish-white hair, and a very narrow silvery band along the orbital margin ; vertex dull ; antennæ wholly dark ; mandibles light ferruginous with the apex black ; tongue long and slender ; hair of thorax white at sides and beneath, pale ochreous above, rather abundant but inconspicuous on mesothorax ; post-scutellum covered with a dense band of white tomentum, and an oblique band of the same at each side of the scutellum ; basal area of metathorax shining, with transverse ridges ; punctures of mesothorax distinct, uniform, and very close ; tegulæ pale rufous, with a dark basal spot ; wings dull hyaline, iridescent, stigma and nervures rufous, second submarginal cell very small and narrow, receiving the first recurrent nervure before its end ; marginal cell bluntly rounded at end ; legs with white hair ; spurs ferruginous ; abdomen broad, rather shining, rugoso-punctate, the first segment rounded, and with much erect white hair ; hind margins of second and following segments broadly whitish hyaline, not provided with well-defined hair-bands ; ventral segments also white-margined.

Hab. Queensland, 91. 16 ; also labelled 315 Hy. Easily known by the whitish margins of the abdominal segments.

Nomia hypodonta, n. sp.

♂. Length about 8 mm. ; black, the abdomen blue-black, with the hind margins of the segments pure black ; pubescence of head and

thorax white, a little yellowish on face, vertex, mesothorax, and scutellum; the mesothorax and scutellum, seen from above, look bare, but viewed from the side they are seen to have rather abundant short fuscous hair; mandibles black, ferruginous at apex; labrum shining black, strongly emarginate; vertex granular; antennæ long and slender, entirely black, third joint shorter than fourth; mesothorax dullish, minutely granulo-punctate; post-scutellum with a delicate white tomentum; sides of metathorax with a large patch of loose white fluff; basal area of metathorax rather large, shining, with numerous raised lines or keels, its hind margin in the middle with a pair of rounded excavations; tegulæ rather large, deep red-brown, the inner hind angle pointed; wings hyaline, the apical margins faintly dusky, stigma and nervures fuscous; second submarginal cell higher than broad, but not small, receiving the first recurrent nervure at its apical corner; legs black, with white pubescence, the basal part of the claws ferruginous, the spurs light ferruginous; second to fourth joints of anterior tarsi triangular; hind femora extremely swollen and convex above, beneath with a concave area, flattened in a transverse direction; hind tibiæ much thickened, with a large and a small tooth beneath towards the base, and the spur-bearing apical lobe incrassated; abdomen minutely roughened, with a subsericeous surface, the apical margin of the first segment minutely punctured, and having a little patch of white hair at each extreme side; the apical margins of the second and following segments with bands of pure white hair, but that on the second is extremely widely, that on the third rather widely, and that on the fourth slightly, interrupted; third ventral segment with a pair of prominences, each terminating in a short sharp spine; fourth ventral segment emarginate, with the hind lateral angles pointed.

Hab. Queensland (E. Saunders), 93. 49; also marked Hy, 308. Close to *N. dentiventris*, Sm., but the pubescence is of a different colour, the hind femora do not present a large swelling beneath, and the ferruginous colour on the legs is lacking.

Nomia australica, Sm., var. *reginæ*, n. var.

♀. Length about $11\frac{1}{2}$ mm.; flagellum ferruginous beneath; scape dark rufous; face with a slender keel or raised line extending from level of antennæ to apex of clypeus; clypeus all black, the anterior part shining, with very large punctures; tongue dagger-shaped, very broad at base; mesothorax shining black, with large scattered punctures, and very minute close ones; tegulæ testaceous and subhyaline, fuscous basally, fulvous in the middle; second submarginal cell almost square; abdomen dark blue, the broad hind margins of the second to fourth segments brass-colour, with hair-bands which are fulvous except laterally, where they are white; the hair-band on the second segment is entire, but thin in the middle; spurs black, those of hind legs curved at apex.

♂. Mesothorax very densely and quite strongly punctured, the punctures not of two sizes; anterior part of clypeus whitish hyaline, the extreme edge ferruginous; truncate process on hind tibiæ not so long as Smith figures for the type.

Hab. Queensland; one female, five males. The female is

marked E. Saunders, 93. 49, and 317. The males are marked as follows: (1.) 91. 16, Hy. 316; (2.) 91. 16, 317; (3.) E. Saunders, 93. 49, 317; (4.) same as 3; (5.) F. P. Dodd, 1902. 319; Townsville, 22. 10. 01.

The Adelaide form of this insect is to be considered the type; Smith himself remarked on the geographical variation of this species. The Queensland race is readily distinguished in the female by the wholly dark clypeus and the entire hair-band on the second abdominal segment.

Nomia flavoviridis, n. sp.

♂. Length about $7\frac{1}{2}$ mm.; head and thorax dull yellowish green; abdomen blue-green (largely blue on first segment), with the hind margins of the second and following segments broadly yellow-green, or the yellow-green colour may suffuse the segments broadly; vertex and mesothorax granulo-punctate; face and cheeks covered with snow-white hair, that on vertex dull pale yellowish grey; antennæ long, flagellum dull brown beneath; anterior part of clypeus pale yellowish hyaline, the edge ferruginous; apical half of mandibles dark ferruginous; tongue dagger-shaped; hair of mesothorax and scutellum yellowish fuscous, not conspicuous, hind edge of mesothorax with two patches of white tomentum; post-scutellum covered with white tomentum; a large patch of white hair on each side of metathorax, and hair of pleura white; area of metathorax rather large, covered with ridges, the posterior margin at middle with two slight excavations (as in *N. hypodonta*, but less marked); tegulæ rufo-fulvous, the inner hind angle pointed; wings clear, stigma sepia brown, nervures dark brown; second submarginal cell nearly square, first recurrent nervure meeting second transverse-cubital; legs with white pubescence; femora metallic green, the knees ferruginous; tibiæ ferruginous with more or less green suffusion; tarsi entirely ferruginous; spurs white; hind femora swollen; hind tibiæ broadened, long-triangular, the inner edge sharply keeled; hind margins of abdominal segments with white marginal bands, that on first represented only by a patch on each extreme side; venter not dentate.

Hab. Queensland, 91. 16; two specimens, both numbered 434. Distinguished from *N. cenea*, Sm, by its strongly metallic colours, the stouter femora, and the pure white abdominal hair-bands.

Nomia flavoviridis var. *doddii*, n. var.

♂. Length about 7 mm.; dark blue, with the third and following abdominal segments olive-green; legs coloured as in *N. flavoviridis*, the tarsi variable, sometimes dark, sometimes quite bright ferruginous; tongue dagger-like; second submarginal cell square, the first recurrent nervure meeting second transverse-cubital.

♀. Length about $7\frac{1}{2}$ mm.; head, thorax, and abdomen entirely dark blue; apex of abdomen fringed with pale chocolate hair; anterior half of clypeus black; legs very dark rufo-fuscous; mesothorax with minute punctures, and scattered larger ones, in the manner of *N. australica*.

Hab. One female, Parry Harbour, C. Bougainville, 92. 4; six males, Townsville, Queensland, S. 12. 01 (F. P. Dodd); 1902. 319. The colour is uniformly very different from that of *N. flavoviridis*, but there are no satisfactory structural characters.

Nomia rubroviridis, n. sp.

♀. Length about $10\frac{1}{2}$ mm., rather broad; black, the hind margins of the first four abdominal segments with very broad entire emerald-green bands, the first two being suffused on their anterior half with vermilion; the fifth segment has a dense fringe of ochreous hair, and the apical segment is covered with the same. Sides of face, area between antennæ, cheeks, prothorax including tubercles, pleura, post-scutellum, and nearly all of metathorax covered with coarse sordid-white, more or less tinged with ochreous; a delicate raised line extends down middle of face to apex of clypeus; antennæ dark; mandibles with the subapical region dark red, the apex feebly bidentate; mesothorax dull, with dense small punctures; scutellum also dull, slightly depressed in the middle, but not tuberculate or spined; *post-scutellum* with a prominent bifid median process, directed backwards, having much the shape of a fish-tail; tegulæ large, the inner hind corner pointed, the base fuscous, the middle ferruginous, the outer hind part broadly creamy white; wings somewhat dusky, stigma and nervures dark rufo-fuscous; second submarginal cell fairly large, a little higher than broad, receiving the first recurrent nervure much before its end; legs black, with pale pubescence; *anterior spur of hind tibia longer than the other, stout and nearly straight, with a little divergent reddish spine arising from the side of its apex*; hind spur curved, simple; black parts of abdomen dull, only moderately punctured; hind margins of ventral segments dark and fringed with hair.

Hab. Australia, north-west coast; 69. 50. A very distinct and beautiful species, superficially resembling a small *Anthophora* of the *zonata* group, with which, in fact, I had accidentally mixed it. It is not precisely a *Hoplonomia*, but it is probable that the diagnosis of that group should be modified to permit its inclusion. In the colour of the abdominal bands it strongly recalls *N. opulenta*, Sm., and *N. elegans*, Sm., from Morty Island and Celebes respectively.

Boulder, Colorado: May 7th, 1905.

DESCRIPTION OF A NEW SPECIES OF PSEUDAGENIA
(HYMENOPTERA—POMPIDIDÆ) FROM NATAL.

By P. CAMERON.

PSEUDAGENIA NATALENSIS, sp. nov.

Black, the prothorax, except the sternum, mesonotum, scutellum, the mesopleuræ above the oblique furrow at the base and slightly below it, the post-scutellum and a line on either side of it, reaching to the pleuræ, rufous; the sides of the first abdominal segment testaceous;